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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,787	04/16/2004	Scott A. McHugo	10030222-4	1281

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AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER

PERKINS, PAMELA E

ART UNIT PAPER NUMBER

2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/826,787

Applicant(s)

MCHUGO ET AL.

Examiner

Pamela E. Perkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This office action is in response to the filing of the request for reconsideration on 18 December 2006. Claims 14, 16 and 17 are pending; claims 1-13 and 15 have been previously cancelled.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feng et al. (6,727,530) in view of *Applicant's admitted prior art*.

Feng et al. disclose a heterojunction bipolar transistor where a collector (203-g) is atop a sub-collector (203-e), a base (203-h) atop the collector (203-h); a base contact (213) atop the base (203-h); an emitter (E; 203-k) atop the base (203-h); an emitter cap (203-l) atop the emitter (E; 203-k), the emitter cap (203-l) comprising a second sidewall with a second reentry feature consisting entirely of a second undercut profile, and an emitter metal (211) atop the emitter cap (203-l). Feng et al. further disclose the collector (203-g) comprising a third sidewall reentry feature consisting entirely of a third undercut profile (Fig. 1 & 2; col. 4, lines 30-56; col. 6, lines 20-43). Feng et al. do not disclose the emitter comprising a first sidewall with a first reentry feature consisting entirely of a first undercut profile.

*Applicant's admitted prior art* discloses a heterojunction bipolar transistor where a base (14) is atop a collector (12); a base contact (24) atop the base (14); an emitter (16) atop the base (14), the emitter (16) comprising first sidewall with a first reentry feature consisting entirely of a first undercut profile; an emitter cap (218l) atop the emitter (16), and an emitter metal (22) atop the emitter cap (18l). (Fig. 1; para. 2-4).

Since Feng et al. ('530) and *Applicant's admitted prior art* are both from the same field of endeavor, a heterojunction bipolar transistor, the purpose disclosed by *Applicant's admitted prior art* would have been recognized in the pertinent art of Feng et al. ('530). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Feng et al. ('530) by the emitter comprising a first sidewall with a first reentry feature consisting entirely of a first undercut profile as taught by *Applicant's admitted prior art* to minimize base resistance (para 3 & 4).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feng et al. ('530) in view of *Applicant's admitted prior art* as applied to claim 14 above, and further in view of Feng et al. (6,770,919).

Feng et al. ('530) in view of *Applicant's admitted prior art* disclose the subject matter claimed above except the base comprising a fourth sidewall with a fourth reentry feature consisting entirely of a fourth undercut profile.

Feng et al. ('919) disclose a heterojunction bipolar transistor where a collector (6) is atop a sub-collector (2), a base (8) atop the collector (6); a base contact (20) atop the base (8); an emitter (14) atop the base (8); an emitter cap (16) atop the emitter (14), the

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emitter cap (16) comprising a first sidewall with a first reentry feature consisting entirely of a first undercut profile, and an emitter metal (18) atop the emitter cap (16). Feng et al. ('919) further disclose the collector (6) comprising a second sidewall reentry feature consisting entirely of a second undercut profile. Feng et al. ('919) also disclose the base comprising a third sidewall with a third reentry feature consisting entirely of a third undercut profile (Fig. 2F; col. 4, line 32 thru col. 5, line 13).

Since Feng et al. ('530) and Feng et al. ('919) are both from the same field of endeavor, a heterojunction bipolar transistor, the purpose disclosed by Feng et al. ('919) would have been recognized in the pertinent art of Feng et al. ('530). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Feng et al. ('530) by the base comprising a sidewall with a reentry feature consisting entirely of an undercut profile as taught by Feng et al. ('919) to achieve high speed, low noise performance in heterojunction bipolar transistors (col. 2, lines 23-44).

### ***Response to Arguments***

Applicant's arguments, see the paper filed 18 December 2006, with respect to claim 14 have been fully considered and are persuasive. The rejection of claim 14 under 35 USC 112, first paragraph has been withdrawn.

Applicant's arguments with respect to claims 14, 16 and 17 have been considered but are moot in view of the new ground(s) of rejection.


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571) 272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PEP  
15 March 2007

  
Zandra V. Smith  
Supervisory Patent Examiner  
16 March 2007